



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,048	03/06/2007	Chi Bun Ching	3800021.00002 / 2506US	1604
77202	7590	12/29/2009		
K&L Gates LLP 3580 Carmel Mountain Road Suite 200 San Diego, CA 92130			EXAMINER LAU, JONATHAN S	
			ART UNIT 1623	PAPER NUMBER
			MAIL DATE 12/29/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/582,048	<b>Applicant(s)</b> CHING ET AL.	
	<b>Examiner</b> Jonathan S. Lau	<b>Art Unit</b> 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-40 is/are pending in the application.
- 4a) Of the above claim(s) 4,6,9,12,23,25-30,32,34 and 36-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,7,8,13-22,24 and 35 is/are rejected.
- 7) ☒ Claim(s) 5,10,11,31 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Withdrawal of Finality of Previous Office Action***

The Finality of the Office Action mailed 4 Jun 2009 is **withdrawn**.

This Office Action is responsive to Applicant's Amendment and Remarks, filed 4 Dec 2009.

This application is the national stage entry of PCT/SG04/00413, filed 15 Dec 2004; and claims benefit of provisional application 60/529,112, filed 15 Dec 2003.

Claims 1 and 3-40 are pending in the current application. Claims 26-30 and 37-40, drawn to non-elected inventions, are withdrawn. Claims 4, 6, 9, 12, 23, 25, 32, 34 and 36, drawn to non-elected species, are withdrawn. Claims 1, 3, 5, 7, 8, 10, 11, 13-22, 24, 31, 33 and 35 are examined on the merits herein.

### ***Election/Restrictions***

Applicant's traverse of the finding Lack of Unity of Invention with regard to Breslow 1978 in view of Breslow 1993 is reconsidered in view of Applicant's Remarks, filed 4 Dec 2009. The traversal is on the grounds that Breslow et al. discloses a charge neutral species and Breslow et al. does not explicitly disclose a compound encompassed by the claims as amended. This is found persuasive because Breslow et al. does not render obvious a compound encompassed by the claims as amended as

Art Unit: 1623

detailed in Applicant's Remarks, filed 4 Dec 2009. A new grounds of finding Lack of Unity of Invention is made in view of Matsui et al. (Bull. Chem. Soc. Jpn., 1978, 51(10), p3030-3034, provided by Applicant in IDS mailed 16 Nov 2006). Matsui et al. discloses mono(6-trimethylammonio-6-deoxy)-beta-CD [beta-CDtma] and the method of making thereof by reaction of trimethylamine with mono(6-tosyl-6-deoxy)-beta-CD (page 3030, right column, paragraph *Preparation of  $\beta$ CDtma*).

The requirement is still deemed proper.

The Election of Species requirement detailed in the Office Action mailed 8 Feb 2008 is modified as follows:

The subgenus of cationic oligomers of a saccharide of formula (I) wherein X is nitrogen. Claims 3, 7, 8, 21 and 22, previously withdrawn as being drawn to a non-elected species, are rejoined.

### ***Rejections Withdrawn***

Applicant's Remarks, filed 4 Dec 2009, with respect to claims 1, 5, 10, 11, 13-20, 24, 31, 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breslow et al. (Journal of the American Chemical Society, 1978, 100(10), p3227-3229, of record), hereafter Breslow 1978, in view of Breslow, R. (Proceedings of the National Academy of Sciences of the USA, 1993, 90, p1208-1211, of record), hereafter Breslow 1993 has been fully considered and is persuasive, as Applicant is persuasive that the

Art Unit: 1623

combination of Breslow 1978 in view of Breslow 1993 renders the invention of Breslow 1978 unsatisfactory for its intended purpose.

This rejection has been **withdrawn**.

The following are new grounds of rejection.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-22, 24 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 16, 20 and 35 are indefinite due to omitting essential steps and necessary structural connections. Claims 17-22 and 24 depend from claim 16 and incorporate all limitations therein, including omitted steps and necessary structural connections.

Claims 16, 20 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps and essential structural cooperative relationships of elements, such omission amounting to a gap between the steps and between the necessary structural connections. See MPEP § 2172.01. The omitted steps and relationships are:

Claim 16 recites a “method of preparing a cationic oligomer of a saccharide of claim 1, comprising reacting an amine, a phosphine, an imidazole or a pyridine with an oligomer of a saccharide having a leaving group.” Claim 35 recites a “method of

Art Unit: 1623

preparing a cationic oligomer of a saccharide as defined in claim 10, comprising reacting an amine, a phosphine, an imidazole or a pyridine with an oligomer of a saccharide having a leaving group." Claim 16 and 35 omit essential steps and relationships because it is unclear what the structure of said "oligomer of a saccharide having a leaving group" is in relationship to the cationic oligomer of a saccharide of claim 1 or 10. For example, said "oligomer of a saccharide having a leaving group" may be a cellulose, hyaluronan or poly-ribose oligomer having a leaving group at any position. The claims do not recite the necessary structural connections between said "oligomer of a saccharide having a leaving group" and the cationic oligomer of a saccharide of claim 1 or 10, or the essential steps to convert said "oligomer of a saccharide having a leaving group" which may have a different saccharide backbone and a leaving group at any position to the cationic oligomer of a saccharide of claim 1 or 10, being a cyclodextrin having a cationic group at the 6 position of a cyclodextrin.

Claim 20 recites "mono-2-deoxy-2-tosyl cyclodextrin" at line 2. The cationic oligomer of a saccharide of claim 1 has a cationic group at the 6 position. Claim 20 omits essential steps as to how reacting an amine, a phosphine, an imidazole or a pyridine with an oligomer of a saccharide having a leaving group at the 2 position can make a cationic oligomer of a saccharide of claim 1 having a cationic group at the 6 position.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1623

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7, 8 and 13-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui et al. (Bull. Chem. Soc. Jpn., 1978, 51(10), p3030-3034, provided by Applicant in IDS mailed 16 Nov 2006).

Matsui et al. discloses mono(6-trimethylammonio-6-deoxy)-beta-CD [beta-CDtma] and the method of making thereof by reaction of trimethylamine with mono(6-tosyl-6-deoxy)-beta-CD (page 3030, right column, paragraph *Preparation of betaCDtma*), meeting limitations of instant claims 1, 3, 7, 8, 16, 17, 19, 20, 21, 22. Instant claim 18 recites further limitations of the halide but does not require said leaving group to be a halide, therefore Matsui et al. meets the limitations of instant claim 18. Matsui et al. discloses the beta-CDtma isolated in an ammonium hydrogen carbonate buffer (page 3030, right column, paragraph *Preparation of betaCDtma*), implicitly making the hydrogen carbonate ( $\text{HCO}_3^-$ ) salt thereof, meeting limitations of instant claims 13 and 14.

### ***Allowable Subject Matter***

Claims 5, 10, 11, 31 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 1623

Claims 24 and 35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 5, 10, 11, 24, 31, 33 and 35, the closest prior art is Breslow 1978 in view of Breslow 1993 discussed as above.

### ***Conclusion***

No claim is in condition for allowance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1623

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jonathan Lau  
Patent Examiner  
Art Unit 1623

/Shaojia Anna Jiang/  
Supervisory Patent Examiner  
Art Unit 1623